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ABSTRACT

For practical application of educational technology in public school education, fundamental changes in education and administration must take place. Schools should have communications centers to include information from the outside world and to make wider use of the new technology. The success of the new technology in public schools depends on the acceptance and training of personnel. This should also be done within the school as an inservice program. Deterrents to the success of educational technology in schools include cost, parental resistance to change, and administrative problems. (SP)

Changes Required in Patterns of School Organization, Management, Staffing, Facilities, and Finance for Technology to Effectively Improve Instruction

by Robert M. Finley*

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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ORGANIZATION

We now have:

Lay People	Policy	Teachers	Supervisors	Administrators
Aides P.T.A.	Board Members	Certified By Elementary and Secondary By Degree	Checkers Evaluators	Principals Superintendents Directors

Should go to

Community Aides	Doers	Planners	Tape Cutters
Citizen Committees Study Groups	Teachers Interns Lay Aides Para Professional	Department Heads Principals Supervisors	Directors Assist. Superintendents Business Manager

Policy Setters	Policy Doer
Board Members	Superintendent of Schools

Mechanical and Technical

A.V.	Public Relations
Art	Transportation
Clerical	Cafeteria
Electronics	Federal Programs
Supplies	

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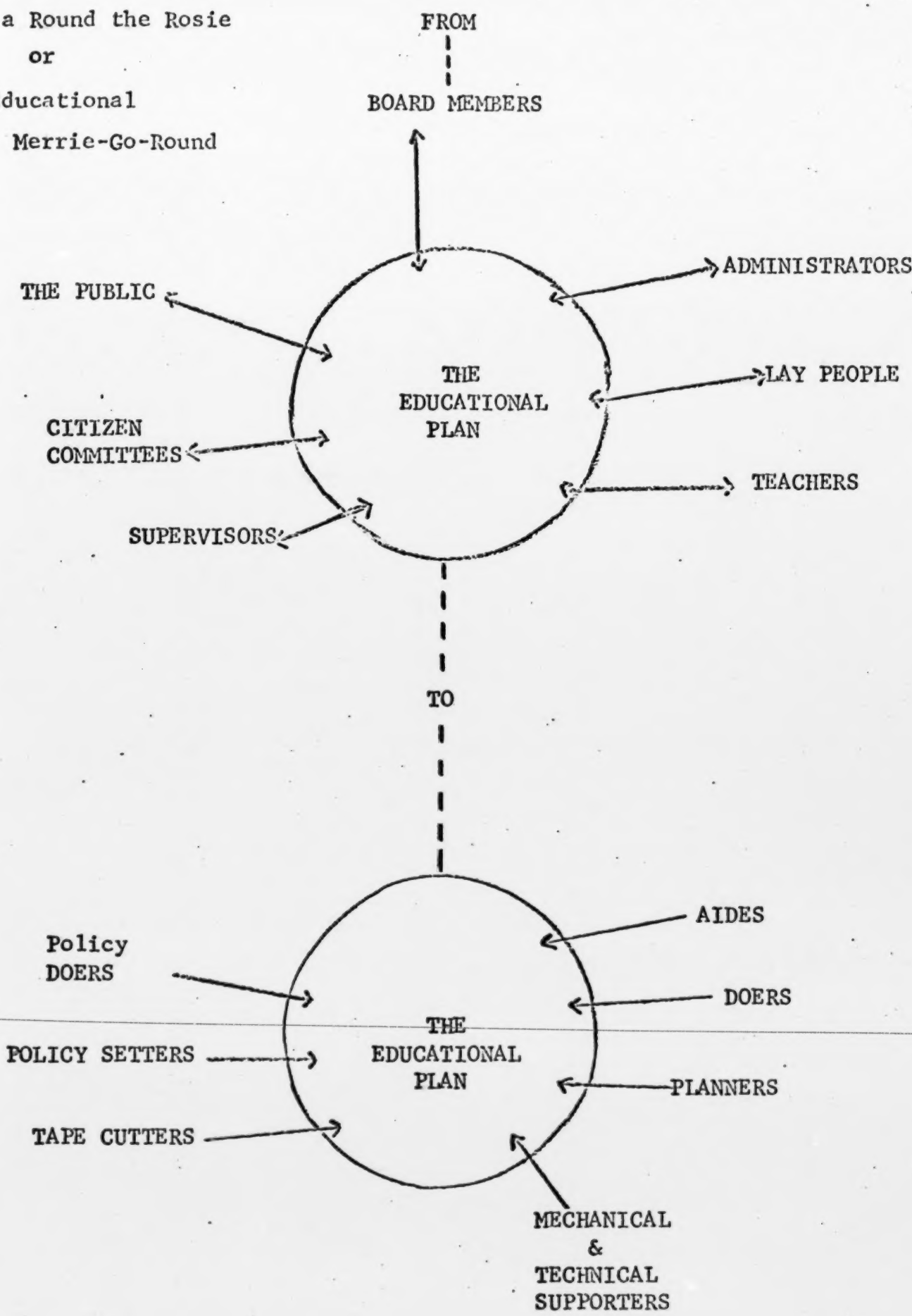
The following diagram depicts the movement from the traditional to the modern approach to operating schools in a community.

Ring a Round the Rosie
or
The Educational
Merrie-Go-Round



While most superintendents are not political in that the Superintendent does not run on a political ticket but in effect he is "elected" by the Board. He is also fired by the Board - in its ever changing philosophy and desires.

The organization of schools is archaic - This is being challenged today by:

. teacher militancy

. Superintendent in Middle

. Curriculum interest

Teachers are militant - and with good reason - because of the treatment of the past. In many ways, teachers deserved what they got - which wasn't much. In another way, the Boards of Education, acting like Industrial owners of the '20's, are getting their just returns. However, most of the blame for teacher militancy of today must be laid at the feet of the Superintendent. (I would have said "placed on the shoulders of the Superintendent," but usually in the past everything started and landed in education with the Superintendent's foot.)

The Superintendent has always seen himself in one of three positions -

(1) Representative of the Board (Agent)

(2) In the middle

(3) Representing the teachers

Most Superintendents have allied themselves with the Board. This was natural since the Board hired and fired the Superintendent. Also the Superintendent usually carried out the policies of the Board. In the third place, the Superintendent's salary was determined by the Board. It was very natural for the Superintendent to be the lackey for the Board.

It has become quite popular lately for the Superintendent to be the "man in the middle" - since negotiations, that is. As a result of this stance, the Superintendent is nothing. He has taken the firm position of a man having his feet planted firmly in mid-air.

The third position of representing the teachers is a rare one - and one of the major reasons why we are now in such a mess. If the superintendent had represented the teachers for higher salaries and better working conditions and fought to provide teachers a chance to do the kind of job that they wanted to do - this present situation would not have occurred. Rational for this opinion is based on the fact that most superintendents were and are educators and that they should take stands when it comes to teachers - members of their own profession. Instead - lay members of the community, called Board members, ran the schools as though they understood what education was all about. It was a case of the sightless leading the seeing eye dogs. I'm afraid it is going to continue - at least until the lay Boards of Education change in makeup and the Superintendent returns to his role of Educational Leader.

Teacher training institutions are not preparing college students to enter into the world of teaching. Oh, yes, they are prepared for the 1940's, but certainly not for the 70's. The public schools have moved too quickly - and the colleges too gently.

The very graded organization from the kindergarten through the 12th grade is archaic and outdated. Although we have discussed and claimed to have "ungraded" or "nongraded" schools for 20 years - this has not happened. Schools are graded - although we know this to be educationally wrong - as an administrative convenience. Such an organizational pattern merely permits us to obtain prettier and more neat statistical tables. The question from the State Superintendent is - "How many children in the 2nd grade?" Answer - 400. So what? Educationally, there is at least a four year educational span and any "second grade" teacher can attest to this. There is no such thing as a "second grade." Such nomenclature merely provides information for census studies or reports to the country. It has nothing to do with education of children. Although it does produce beautiful, non-read statistical graphs and tables.

But how to break the line since we have been trying for 20 years and still have not ungraded? One suggestion would be the "Birthday Kindergarten." It is utterly ridiculous to stay a child's education for a year simply because he wasn't born before December 1st. Why not enter children when they reach their 5th birthday. Send them a Birthday card - and - as a gift - have them come to school. What a psychological gift. (School must be something wonderful.) As a result, children would be entering school each month - not all in September. This gradual entrance would permit us to pay more attention to small groups of children each month and therefore more reasonably plan his education. This would force an ungraded school - although I fear we would categorize the children then by months. Such as: John Jones - Primary - May 1; Sue Smith - Primary - March - 3; etc.

<u>TEACHERS' NEGOTIATIONS</u> - Teachers' Negotiations will tend to bring about new trends in management and eventually in education. Teachers and their organizations are already demanding more voice in curriculum direction, evaluation, and actually the administration of the schools. I am not so certain they are wrong, considering the botch we are in. Since some teachers are practically receiving more money in 9½ months (per month) than many administrators, perhaps they should earn their keep in adding to the farce of school administration. It couldn't be much more of a mess with their help.

Teachers' Negotiations can only lead to two logical conclusions - on the plus side.

(1) A 12 month year of education

(2) Merit salaries

(3) Loss of tenure

If teachers thought these two outcomes would occur, I'm afraid negotiations might come to a screaming halt; but they haven't thought of these possibilities.

Why will this happen? Simple. At the present, teachers are dealing and bargaining with Board members. The public support is with the teacher - as well it should be. Teachers have been underpaid, etc., etc. However, Boards of Education are merely the controller of funds - not the source.

The source of the money is in the community. Since the community members are not yet aware of some of the salaries being paid for 9½ months, or 180 days, they have not reared their ugly tax heads. But this will come when the Boards can no longer come up with the demanded money - and the teachers refuse to teach. Then the news will become public that a new teacher, fresh out of college, will earn $8,000 and some teachers will get $16,000 to $20,000. When the man in the street compares this with his pay check - for 12 months - all hell will break loose.

Teachers have received support from the community because it feels sorry for them. This will disappear unless the teaching profession builds up. A different image then is often depicted in The Chicago Tribune cartoon of the old maid school teacher on the opening day of school. The people will then demand that teachers work like other human beings - 12 months or at least 11½. And then when the people discover that they really don't work 9½ months, but merely 180 days - watch the fireworks. Goodbye 2 weeks at Christmas, 1 week at Easter, all Holidays, etc. It should be an entertaining episode.

Then, also, people will question that all teachers should get the same increase merely because (1) years on the job and (2) what degree is tattooed on the forehead. This will undoubtedly lead to a form of merit salary. The good ones get more; the poor ones get less. It's the American way and it's bound to come.

It is interesting to note that in education today, teachers are asking to be paid extra for anything over and above their teaching: coaching, baton twirling, study hall, bus duty, chaperone, etc..... etc..... I am not saying

this isn't right - nor wrong - but wouldn't it be interesting to see a Board of Education grant an extra amount of money to a teacher for "a superior job of teaching?"

To have the audacity to predict that tenure will disappear in the future might be fool-hardy, but .... the American public is a funny and often unpredictable lot. Someday, as less than average teachers (yes, we have some) keep getting better and better pay, some people of the community will demand that these teachers not be allowed to teach their children. I can't blame them. If we keep stating that education is so important, why then must we keep the incompetent? I don't want my children in the presence of a lousy teacher for a whole year. This must go - and the public will see that it does.

Yes, school organization is changing and it's about time. Changing in administration, Board relations and organization, teacher militancy, pupil grouping, and Federal, State and Community impact. The only phase of education that doesn't seem to be changing are taxes on real estate - and they really are - they're going up.

MANAGEMENT

When we think of management of education - particularly the public schools - we think of administration. Normally, as has been the pattern, the top of this management is the Superintendent. At least he was the top. Today changes are definitely taking place in this long cherished position. The forces causing these changes are terrific.

(1) Boards of Education

(2) Duties and Responsibilities

(3) Lay and Citizens Groups - questionnaires

(4) Politics

(5) Public Relations

(6) Changes in Education

(7) Lack of Money

(8) Paper work

(9) Pressures

(10) Federal programs

(11) Transient teachers

(12) War

(13) Integration

(14) Negotiations

(15) Consultants

The trend is for the Superintendent, Principals, Department Heads, and Guidance personnel to form a management team and join the Board of Education and the taxpayer. The militance of teachers has brought this about. Teachers want a piece of the action and a cut of the melon.

As has been the case for many years, the position of the Superintendent has been clear - as written - but not clear in actual practice. There is little or no doubt that the Board of Education legally has the responsibility for creating policy - and the Superintendent is blessed with the job of carrying out said policy. In brief, he has the administrative power - would that it were this simple. The problem arises in the understanding of what is policy and what is administration.

In almost any business of which I am aware, the administrative head is told what has to be done and then he is given his head to do it. If he doesn't succeed, a new man is appointed. The difference in business, however, is Evaluation. This has somehow eluded us in education. In business it is relatively easy to figure profit and loss. Not so in education. In business one can determine rather quickly if a salesman sells more or less of a product. Not so in education. In brief, business has objectives and goals that can easily be checked. Not so in education. How much did a child learn this year from this teacher? Only achievement tests tend to estimate - but we're

not sure. Is this teacher (salesman) good or bad? Guess... Since we cannot absolutely be objective in evaluation in education, why do we keep trying. Why must we avoid subjective opinion. It is as good a criterion as any objective data that we have.

In the evaluation of the teacher we have merely added more money each year based on the number of years in the business plus the number of hours studying (more degrees). What a farce! And yet, we are deterred from using subjective opinion in determining good or bad since the association of teachers does not like or trust it. They would rather continue on the path of education for medocrity. As someone has said - Education is the only business that when we find something is wrong or doesn't work, we continue to do it.

In some way the Superintendent must be protected from the whims of changing Board of Education members. In some way the chief administrative offices of the schools must be permitted to bring about better education without the Board of Education playing Mickey Mouse with his office. No business could long exist if it were run the way schools are. It would be bankrupt within a year. Board members must define their jobs. They must determine to stay out of education and let the Superintendent run the schools. Granted, the Board has many duties - but they are not administrative. I have found that most Board members are honest and hard working citizens. But they are too hard working at something about which they know very little - modern education. It is true that each Board member went through school, and each is a well meaning and respected member of the community, but each member has to learn that "you can't please the community." There isn't such a thing as a community when you try to please it. There are many communities within the political boundary ..... and you can't please them all. Too many Board members want to be popular, That is not their job. Too many Board members want to "protect" the community. From what? - Higher taxes, Experimental programs in Education, Modernizing

education, etc., etc. As a result of this motherly complex, we have protected the communities from excellent education.

STAFFING AND FACILITIES

For hundreds of years we have staffed schools according to the book. It hasn't worked but it has been administratively convenient. The package and the process has been very neat and convenient. It goes something like this:

Step 1 - Take the number of children in any "grade" and divide by 25 and this will tell you how many teachers you will need.

P.S. Sprinkle in a consultant or supervisor here and there.

Step 2 - Build one room 30 x 30 for each class. This will tell you how big the building will be - and above all the cost/square foot.

Step 3 - Build the building as cheaply as possible. The formula for this is repetition of the single unit (class) connected by hallways and stacked one upon another.

Now let us analyze the Formula.

(1) What is the term "grade?" This seems to be the base for grouping children for learning. In some way this term "grade" is a magic way of putting children together because they are approximately the same age - Hogwash!

The term "grade" is an artificial administrative convenience. It is used to inform the County or the State how many children we have in any one grade so that we can get money for each one. It has nothing to do with good education. This graded jargon begins with the kindergarten - and often the Nursery School - by setting down age criteria for entrance. For instance: To go to kindergarten, a child must be 5 years of age by December 1st. Now what does this mean? It merely suggests

that a child is ready for formal education based on "how many years he has been on earth." What a base for education! By no means of the imagination could we possibly assume that all 5 year olds are at the same degree of learning and readiness. As we enter children on the chronological basis, we merely instill and cement the outdated graded system. We have "talked" ungradedness andnongradedness for years - it hasn't happened and it won't as long as this entrance program continues.

(2) Why the magic 25 to 1 ratio? Dr. Alvin Enrich tells me that the history of the 25-1 ratio dates back to the TALMUD before Christ. This obviously relates to the "handling" or "control" of a group of children by one person. Certainly it doesn't relate to the teaching of each of the 25. There is absolutely no evidence to show that 25 is the best size group for teaching. Rather than looking at the control or handling, why not look at what size group is best for teaching and learning. If this is done, we should then look at what we are teaching and what means of communication appears to do this best. For example:

Investigation - 0-1 - Independent Learning - Contract

1-1 - Guided - Individualized

1-(6-8) - Discussion

1-(12-15) - Decision Making

Large - One way communication
Stimulation

If this is true, then we must take a look at staffing in order to bring this about.

In interviewing teachers, we usually look for which "grade" the teacher wants to teach. We never ask:

(1) Do you work better with fast or slow children; mature or immature.

(2) Are you better working with large groups, small groups, individuals.

(3) Are you better at discussion, lecturing, or face to face.

No, we ask what do you teach and they say 3rd grade. Rarely do we ask: What do you like to teach and what don't you like. No one can teach all areas in a superior fashion. I would want a teacher to say:

(1) I work best with small children

(2) I work best with discussion groups

(3) I like math best - hate English

I would have the teacher work in a team, teaching the sharper kids in discussion groups (6-8) in the field of mathematics. This would be her main responsibility. Not one grade, however. We must instill the idea that "if you don't like what you teach, don't teach." You won't fool the children. We administrators must create an atmosphere that will permit teachers and children to make mistakes. If mistakes are not made, then we are not trying anything.

Some people would surmise that we would not then teach the basics - not so. Basics or fundamentals should and must be taught to most children in the first 4 or 5 years of school. The next 3 years should be exploratory years followed by the directional years of the high school.

Somehow we must tear ourselves away from "preparing" kids for the Middle School, the High School, or for College. This philosophy is backwards. For too many years the curriculum has come from the top- that is, the University has said to the High School - you must teach thus and thus, the High School pass the word to the Junior High, saying such and such was necessary in order to succeed in "our" High School. Naturally, the Junior High School gave the word to the elementary schools. In other words, we are preparing the kids for the most conglomerate of grades, rather than having the High School change its curriculum to meet the needs of the incoming students. The order of the day has been "let's fit the kids into our schools" rather than fitting the school to the kids. It's easier but the day is coming. As a result of this stagnant thinking, we don't have "drop outs" today - we have "push outs."

FACILITIES

From the days of the Old Quincy School to the present, buildings for educational purposes have not really changed too much. In most of these monuments to mediocrity we still figure the superiority of each building by how many kids we can cram into the least amount of space; the square foot cost; etc.... etc....

It is amazing that most businesses build a building and then proceed to advertise how expensive and edifice was. In education we are expected to brag about how cheap the building is into which we are to thrust and trust our most prized possessions - our children - and our school buildings look like it. They are cheap. Rarely do they do the job because the bonding power isn't enough to build the space that we really need. Rarely

do we build until the present building is overly-packed with children and by the time the new one has survived the scars of cutting and skimping, it is almost filled.

Sometimes I think we should build 3 types of school buildings:

(1) One that will automically level itself at the stroke of midnight 25 years after being built.

(2) The Bathtub School - that is one that you pull the stopper and the whole thing goes down the drain.

(3) The building that can later be sold to business, etc....

Using buildings, as we are today, that are 75 to 100 years old, is a disgrace to the community and its "pride" in education. Perhaps we should tear them all down, paint each brick gold, and attach a sprig of ivy to each and console each tax payer who attended "good old Main Street" by giving this mantel piece to each.

Buildings being erected today should be so built to protect the community in the future. Like most other businesses, education is changing, whether we like it or not. Schools of the future must be able to accept new ideas, new physical features, etc. Only if we build modular, clear space, fluid, organismic buildings can this be possible. Educators of the future must not be stuck with 20% of the building in halls; cracked asphalt, vinyl, or terrazo floors that have stood the test of time. Each building must be built for air conditioning since schools will be used year round. If the population continues as it has - and there seems no let up - perhaps we better build the roofs of these schools so that they may handle large helicopters. Certainly buses will not do the job in the future - if we want children there on time.

Much better thinking must be considered for the future in building schools. No longer can we merely build them as cheap as possible. Such building just doesn't pay - it never has. Few people realize that the cheapest part of education is the building - operation is where the money goes.

FINANCE

And finally, we come to the name of the game .... money. In the past we have suffered under the delusion that we have "free public education." Nothing could be further from the truth. Free, merely means that we are free to go to school - but that's about it. Education is, and should be, costly. In fact, it is going to be more costly. If so, where will the money come from? In the past, local real estate taxes have paid the bill. Time is growing short for this method. The State and the Federal Governments are both moving in. Involved in this change is the fear of "loss of local control." There is little doubt that this is a vital concern; but the local community deserves to lose this control if the result of local control is the type of education resulting today. The local community with few exceptions has not done the job, mainly because the people of the community have not held education in high esteem. Therefore, they have not financially supported the venture. Witness low teacher salaries, dilapidated buildings and 20 year old textbooks. This can no longer be tolerated and, in fact, it won't be. But, can the local community face the increase - and do they want to? In 8 out of 10 cases, the answer is "NO." Therefore, enter State and Federal saviors. How it will be done is anybody's guess. But it will be done. It should be interesting.

With the foregoing as a Preface:

- - - What and where is the place of Practial Application of Technology

in Public School Education.

Naturally, if you tend to agree with the above mentioned thoughts - without changes in structure, weight, organization, personnel, etc. - there can be no practical application of Technology. To be applicable and better education, certain things must change in order that technology enter the school and the classroom.

. Curriculum

. Finance

. Personnel - (lay people)

. Leadership

. Control

. Boards of Education

. Viewpoint - Education to Business viewpoint

. Evaluation - (profit motive)

. Cost control

. Cooperation - (public schools and colleges)

. Maturation (we are in 20th century - helicopters, traffic, food, freedom)

. Research

. Break the mold - (Kindergarten, 12 months, merit, incentive)

How can instructional technology be best used in schools to meet the needs of each individual student for learning experiences truly revelant to their interest, concerns, and aspirations? A good question but a very complicated answer.

First, a little history that has to play a big part in any future use of technology in the schools. Technology is not new in the schools, contrary to much modern day thinking. In fact, what is new in the schools? I quote a modern statement uttered about 350 years before Christ by a man by the name of Plato:

> "Education and admonition commence in the first years of childhood, and last to the very end of life. Mother and nurse and father and tutors are vying with one another about the improvement of the child as soon as ever he is able to understand what is being said to him." (Dialogues of Plato, Protagoras)

I believe that we have been hearing the same words today. So .... what of the latest utterances pertaining to technology in the schools? Is it true that big business has seen the light that education is big business and the great commercial groups of the country are pushing their products? This is true and yet how successful will this venture be if the fine products in the process of being turned out will not be turned on in the classroom? Do you remember when the first photograph entered the classroom? Neither do I, but I would venture to say that it was looked upon as being too expensive to buy the camera and the film, and what could the photo do that an art teacher couldn't. Yet today, almost every school has a camera - gathering dust when it could be used much better. Next recollection of course was the entré of the victrola, better known as the phonograph. The same human cry went up then as we hear today. "The

machine is fine but there aren't enough good records." Today, every elementary room is equipped with a phonograph, which of course is rarely used because of newer pieces of equipment - which are rarely used. As an aftermath of the War (which one I can't remember), the movie projector made its entrance into the school. Not the classroom, mind you, but the school .... system. Gradually we have now a projector or two in each school, but the same human cry comes about. "If I can get someone to thread it and run it, fine....; however, the films come late because we have to order them a year or two in advance, and when they come, we have already studied the subject or are not ready for the film." Very poor coordination. Teachers have never learned to use the projector and they are afraid of this little device. No wonder the colleges don't give a course that is mandatory in audio visual aids, and these courses, if included in the colleges, are usually voluntary. How many States make this course mandatory? Very few. So the movie projector, as great as it may be, is not used correctly and the films are rarely previewed by the user. In brief, the movie today is sort of a breather for many "teachers" and the first showing of the film is as new to the teacher as it is to the children.

Remember the wire recorder? What a breakthrough. Then the tape? Also, remember we had one for each school district, also. Now we have one or two per school but usually few tapes. And again, find a teacher who could master the techniques of threading the device.

Enter the age of the slide and strip film projectors. Much hailed and greatly overused ... and still the soft ware was and is inadequate.

The language lab made its debut and everyone got on the band wagon. Most schools bought up the equipment as soon as Uncle Sam footed the bill. We felt that we needed language labs so badly that we rushed into the

language lab with great gusto. Oh, of course, the public helped us so that we could begin teaching French in the first grade. Well, the lab was placed in the high school, and, of course, in a sound proof room, carrels, etc....then we put ear muffs, ear phones on each child as if we needed them. After a few years, we have found the language lab to be a very expensive, seldom-used, educational toy. What next?

Now, we are playing with T.V. video tape recorders and waiting with baited breath for the computer. More of the same, no doubt.

The point that is being made is that no matter what the technological breakthrough that enters the school, there is always one deterrent to its success ..... the human being. The teacher, the principal, the parent. There is little doubt that technology is on its way; the problem will be - will we be ready for it....ever?

Now, we are caught in the middle. On the one hand large business firms are in the process of turning out technological advancements which, if used properly, could enhance our educational product. On the other hand, educators are screaming about individualized teaching and meeting the needs of the individual student, and yet the school people are ignorant about the use of this very advancement.

Technology in the schools will come. Some of it is with us in some schools now. More will follow. Several facets must be discussed if true use is to be made of this event.

1. What will come?
2. How should it be received?
3. What are the deterrents to success?
4. What are the advantages of further technology in the schools?
5. What are the steps toward providing a framework for successful introduction of technology to teachers in the schools?

What will come?

Without doubt the technological advancement within the schools will come with electronic devices. The main difference with these devices of the future will be that not too much soft ware will be necessary, as in the past. By that, I mean that much of the input into the devices will come from the air or by wire. For instance, I believe that communication centers are needed in each school. I am not speaking of Learning centers nor Resource centers, but, instead, a center that would include the communications emanating from the outside world. If one stops to think of it, the school is the only institution or business that has little or no communication with the outside world. Unless a secretary has sneaked the radio on, there is/no outside input of news. The school, which should be one of the first to know, is usually the last. Therefore, we are looking to the communications center which would include:

A large news map of the world. Much like the maps on T.V. during political elections. These maps should be complete with lights and flash news happenings as they occur for all to see. A newspaper could be printed for the people of the school as the news events happen.

A ticker tape/to bring the news direct should be in operation. This could and should be a teletype machine with wire service.

A complete teletype bringing the world weather reports.

Radios which bring overseas foreign language programs.

T.V. tuned to constant news media.

Ear phones for listening to the broadcasts.

Either in the center or on the front of the building, a moving news ribbon, much like that in Times Square. This would keep the people up to date in the school and certainly broadcast the events of the school and community on the outside.

School Tie-Ups

In the future the schools should be tied together by either waves or wires for instant communications. This should be spread throughout the community for such events as closing schools, etc.... This is a real need.

T.V.

Although we have played with T.V. in the schools, we have not been sophisticated enough to really use this piece of equipment to the best results. Far better has this device been used in the home. The reason for this, of course, is that the home is not on a schedule, or can change its schedule, while the school tries to work the T.V. into its schedule. If the school schedule remains so tight, the T.V. cannot be worked into it. The schedule of the school must become flexible like the home if this piece of equipment is to be used. Of course, the video tape recorder is coming into its own, if we can train the teachers how to use it. We should look for T.V. tapes not only being used in the school but sent home to be attached to the T.V. set and played like a film on a projector.

Bus Education

A child spends much time on the bus these days .... doing what? Why not take the idea from the commercial air lines and show educational T.V. or films on the bus. Even audio tapes would work.

Individualized Scheduling

One of the biggest booms to education would be the perfection of the computer that could schedule students individually, every day; not each year.

We must move to the individualized, smorgasboard curriculum and this can only be done with the aid of the computer. Granted this cannot be done yet, but if we can send three men around the moon, we certainly ought to be able to schedule a high school each day.

Summer Education

Electronics should endeavor to provide the students with summer education based on individualized cassettes, either film, audio, or T.V. Very few teachers would be needed and the education would be set in action with the constant use of the very equipment that lays stagnant each summer.

How should these new devices be received?

Undoubtedly, the success of technology in the public schools in the future depends upon the acceptance and training of the personnel in the colleges and universities. We can train the personnel in the schools but this is temporary. This job should be done before the teacher comes to the school. This is our big problem today. The teacher comes fresh out of college without the least possible notion what team teaching, ungraded, etc, is. They must be taught in college, but the college prof. must be first and this is a monumental task since most profs have all the answers now.

Once the teachers coming into the schools are taught, then constant in-service training throughout the calendar year must be brought about. Not just during the year, but also in the summer. This has to be done if we are to keep up with even later technological breakthroughs.

Reallocate Funds

Many people insist that money will not be available for this technological innovation. We must study the budget and reallocate some of the money that is not being spent well. Granted, that this means playing with about 20% of the budget, since the rest is in personnel. However, we may have to get along with fewer people in order to do the job.

It should be helped that the teachers will not fight this technological advancement, but they probably will since they will liken it to automation and possible loss of jobs. This should not be the threat since the teacher is indispensable. Some teachers, that is. The possible threat to the teacher will bring to their attention that only good teachers will be employed in the future.

More Men and Technicians

Since most women, and especially young girls, are deathly afraid of anything that moves mechanically, more men must be brought into the field of teaching. This should not be too difficult since the salaries are beginning to get competitive. Along with teachers of the male gender, we must begin hiring technicians instead of more teachers.

What are the deterrents to success?

Cost: While I have talked of reallocating funds to meet the cost of these technological devices, the problem will be the original cost of each item until they become numerous enough to be cheap. The same happened to the video tape recorder and other devices. Somehow, some way must be found to make the objects reasonable for the schools. Some subsidizing might have to be used to do this such as the language lab.

Parent: Parent groups will naturally look askance at such innovations, as they have in the past with modern math, team teaching, etc... Let anyone state that the little darling will not have the total attention of a mother hen for six hours a day and all hell will break loose. Together with these gripes will come the John Birch Society and the like, with the scream for return to the McGuffey reader, motherhood, and the flag .... but not of the technological variety.

School Cooperation: Undoubtedly, at the start, no individual school will be able to do the job alone. They must cooperate and share. This will be a problem since each school likes to retain its individuality. Perhaps some of this individuality will have to be sacrificed in order to take advantage of the technological gains.

Buildings: Some of our antiquated buildings will need some going over in order to bring about conditions that will permit the use of technology. This will not be as important as the change in people, however.

Administrators and Boards: The real key to the implementation of newer thoughts and instruments of better education rests with the administrators and the Boards. The Superintendent is the real mover, and without his foresight and planning, we can be assured that the Boards will not move. Administrators must begin now to become educated as to the use and employment of these newer techniques. This is a must.

What are the further advantages of technology in the schools:

Individualized Instruction: This has to come about. Something that we have been talking about for fifty or sixty years but haven't attained. Technology can bring this about.

More kids, fewer teachers: With the cost of education going up, primarily because of teachers' salaries, something has to give. I believe that we will have to educate more children with fewer teachers because of the cost. Technology must be the answer.

Cover more in less time: Because of better planning and convenience in technology and not being so dependent on the teacher, we will and must cover more knowledge in less time.

Less space: As we individualize and introduce technology, we will need less space in order to achieve more. All children will not have to be in classes nor come to school at the same time therefore saving the need to build more buildings and space.

Year round. or extended schools. will evolve.

Standardized Minimums and Standards: Through technology better standards will evolve and comparisons will be more easily made. This could introduce a national minimum curriculum.

Immediate Testing and Evaluations in Less Time: Computerized testing and evaluation could be done in less time and more accurately, also bringing about diagnostic testing.

What are the steps toward providing a framework for successful introduction of technology to teachers in the schools?

1. With Federal backing, set up about six pilot schools throughout the country where teachers can see the results.
2. Train the college and university teachers.
3. Have the business people educate the trainees.
4. Take time to have teachers understand the reasons before putting the technology into the schools.
5. Educate the parents before using technology.
6. Run pilot schools with the district before all schools.
7. Involve all schools.

Technology must come. It is inevitable as stated above. When and how soon is not the question. Why is the answer. We must now begin training and educating people why this must come. It is already too late.